The regulation of protein synthesis by mTOR signaling : a potential target for cancer treatment?

PROPOSITIONS

belonging to the dissertation

"The regulation of protein synthesis by mTOR signaling:
a potential target for cancer treatment?"

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1. Gene expression is altered in response to hypoxia by regulating the process of mRNA translation in a dynamic and gene-specific manner (this thesis).

2. EGFRvIII stimulates tumor growth and promotes the survival of tumor cells exposed to radiation or hypoxia (this thesis).

3. Inhibition of mTOR with rapamycin can reduce tumor growth but it also increases the fraction of tumor hypoxia which complicates its use in combination with radiotherapy (this thesis).

4. The regulation of mRNA translation by 4E-BP1 phosphorylation consists of both rapamycin sensitive and insensitive inputs that must both be inhibited in order to effectively block global translation (this thesis).

5. TOR signaling determines the social fate of female honey bee development by differentiating between queen and worker bee phenotypes. PloS One. 2007; 2(6):e509.

6. TOR deficiency in the nematode *Caenorhabditis elegans* more than doubles its natural life-span. Nature. 2003; 426(6967):620.

7. Dietary supplementation with rapamycin late in life extends the lifespan of genetically heterogeneous mice. Nature. 2009; 460(7253):392-396.

8. Over the past five decades, much of basic cancer research has drawn conclusions based on work using cell lines established from human tumors, which may or may not reflect the original tumor population, and that have undergone potentially thousands of cell divisions in the lab before being used in experiments conducted under non-physiological oxygenation or nutrient conditions.

9. The early bird may get the worm but it's the second mouse that gets the cheese.

10. The significance of current scientific research is increasingly assessed by citation indices rather than by *P*-values.